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Under the Skin Social Stress: Physiological Effects of Racial Discrimination and Family Communication During Adolescence

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Under the Skin Social Stress: Physiological Effects of Racial Discrimination and Family Communication during Adolescence

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Biography

The author was born in Saint Paul, Minnesota on November 2, 1994. She graduated from DeLaSalle High School in Minneapolis, MN in 2012. She received her Bachelor of Arts degree in Psychology from the University of North Carolina at Chapel Hill in 2016. She is currently pursuing her MA/PhD in Clinical-Child Psychology at DePaul University.

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Abstract

Adolescence is a formative, developmental period that encompasses increased life stress. For youth of color, these stressors are amplified due to race-related experiences such as racial discrimination. Studies have shown that family communication greatly influences the physiological stress response in childhood development. The purpose of the current study was to examine how interpersonal and institutional discrimination impact the physiological stress response and how supportive family communication may influence the stress response in adolescents from various ethnic and racial groups. A sample of 379 ethnically diverse adolescents participated in this study and completed self-report questionnaires. Cortisol samples were collected in conjunction with the Trier Social Stress Test (TSST). Three-way moderation analyses were conducted to explore the moderating effects of family communication and race/ethnicity on the relationship between racial discrimination on the HPA axis through the comparison of cortisol indicators. Findings showed that Asian youth reported significantly higher total average cortisol levels than their Black, Latinx, and Other-identified peers. Results also indicated that youth who reported more interpersonal, but not institutional discrimination, experienced more cortisol reactivity. Further, supportive family communication enhanced the impact of interpersonal discrimination on cortisol reactivity for Black youth only. Findings indicate the ongoing importance to examine the physiological effects of racial discrimination and the role of supportive family communication in youth from various ethnic and racial backgrounds.

Keywords: racial discrimination, cortisol reactivity, family communication, adolescence

Introduction

Adolescence is a formative, developmental period that encompasses increased life stress due to environmental, psychosocial, and environmental changes. Youth exposed to heightened stress during this time may exhibit increased susceptibility to heightened stress reactivity which in turn negatively impacts health outcomes over time (Adam et al., 2020). For individuals of color, these stressors are amplified due to race-related experiences such as racial discrimination, the behavioral manifestation of racism (Anderson et al., 2018; Carter et al., 2019). Adolescents from various racial groups report instances of racial discrimination. Racial discrimination is the primary form of stress for Black youth (Anderson et al., 2019) with up to 90% reporting discriminatory experiences (Anderson et al., 2018). According to a 2007 national survey, 54% of Latinx respondents believed that discrimination against those who identify as Latinx was a major problem in the U.S. (Lee & Ahn, 2012). More recently, Latinx youth reported increased discrimination due to the current social climate (Constante et al., 2021). Although Black youth are reported to experience racial discrimination at a higher frequency than any other ethnic group (Gaylord-Harden et al., 2012), Asian adolescents may experience discrimination among peers at significantly higher rates than their Black and Latinx peers (Lee & Ahn, 2011). Due to its unpredictable and uncontrollable nature, discrimination is a persistent social stressor that has harmful health effects on both psychological and physical health outcomes (Pascoe & Richman, 2009; Carter et al., 2019). Youth of various racial and ethnic backgrounds are not only aware of racial discrimination, but also may differentially acknowledge various aspects of interpersonal and institutional race-based discrimination and racism, with a stronger emphasis on interpersonal

discriminatory events (Bañales et al., 2021). The effects of racial discrimination may be especially detrimental during adolescence, and perhaps even more robust than during childhood and adulthood life stages (Adam et al., 2020).

Racial Discrimination and Health

The impact of discrimination on internalizing symptoms in youth from minoritized backgrounds has been widely explored. For Black adolescents in particular, heightened experiences of discrimination result in an increase of depression and anxiety symptoms (Gaylord-Harden et al., 2012; Sellers et al., 2006; Simons et al., 2002; Wong et al., 2003). In a meta-analysis that examined discriminatory experiences in Latinx youth, discrimination was found to significantly and positively relate to anxiety, depression, psychological distress, education and employment outcomes, and unhealthy behaviors, with discrimination and anxiety having the strongest correlation followed by discrimination and depression (Lee & Ahn, 2012). Lee & Ahn also conducted a meta-analysis to strengthen the existing literature exploring the relationship between racial discrimination and mental health outcomes among Asian Americans (2011). In congruence with other studies, the findings showed that racial discrimination was significantly correlated with greater levels of anxiety and depression (Lee & Ahn, 2011).

Several systematic reviews have concluded that discrimination has the strongest association with poor mental health outcomes compared to poor physical health (Berger & Sarnyai, 2015); however, youth who experience frequent discrimination may be at greater risk of developing physical health concerns than those who do not experience discrimination. Youth who experience frequent discrimination may be more likely to have an elevated body mass index (BMI; Brody et al., 2018) and tend to report poorer

perceived physical health (Grollman, 2012). Although there has been ongoing research exploring the discrimination and health link, less is known about the potential mediating link of stress reactivity. To better understand racial discrimination as a social stressor and its impact on overall health outcomes, this study examined the physiological impact of racial discrimination on the hypothalamic-pituitary-adrenal (HPA) axis, measured through salivary cortisol. Identifying physiological responses stemming from race-related discriminatory events experienced during adolescence may better predict health outcomes across the lifespan and inform future intervention efforts focused on positive youth development.

Types of Racial Discrimination: Interpersonal and Institutional

The impact of racial discrimination may differ depending on the type of discrimination. The current study examines both interpersonal and institutional discrimination. Interpersonal discrimination involves covert or overt racially charged interactions and microaggressions (e.g., social exclusion, verbal insults, and differential treatment; Ayón & Philbin, 2017; Hope et al., 2015). Interpersonal discrimination may be especially notable during adolescence, as negative socially evaluative interactions may trigger a physiological response even if youth may be consciously unaware of its occurrence (Acevedo-Garcia et al., 2013). A multilevel analysis explored the relationship between interpersonal and individual racial discrimination and health status in adults and findings showed that discrimination was associated with lower levels of mental health outcomes (Gee, 2008). However, interpersonal discrimination was not a predictor of general or physical health (Gee, 2008). There is other evidence that there is a significant relationship between both forms of racial discrimination and physical health concerns

(Hope et al., 2015). However, these studies that centered around comparing different types of discrimination on health outcomes focused on adult populations, and less is known about the differences in effects among children or adolescents.

Although interpersonal discrimination is still a significant problem that warrants ongoing conversation, emphasis on institutional and systemic racial discrimination needs to occur in tandem with examination of interpersonal discrimination. Identifying and measuring racial discrimination solely on the individual level is incomplete and may lead to underinformed interventions and decreased sense of urgency for much-needed structural and policy changes (Neblett, 2019). Institutional discrimination is defined as "formal or informal structural mechanisms, such as policies or processes that systematically marginalize or exclude nondominant groups" (Ayón & Philbin, 2017; Huber & Solorzano, 2015). Institutional racism can be viewed as restriction or denial of access and opportunities through laws, practices, and customs (Neblett, 2019; Jones, 1972). Institutional racism may be the most important contributor to the racism-health relationship; however, it is challenging to fully understand and quantify its lasting impact on health outcomes (Williams & Mohammed, 2013a). Studies have many focused on institutional discrimination through the lens of residential segregation (e.g., redlining; Gee, 2008); however, institutional-level stressors and environmental disadvantage through a youth perspective have been underexplored. The current study aims to better understand system-level discrimination by examining the effects of environmental inequity and the differential means of access and opportunity.

Interpersonal and institutional racial discrimination are tremendous barriers to overall health quality (Hope et al., 2015). Additionally, interpersonal discrimination

deriving from structural racism may activate adverse physiological changes that hinder one's ability to adapt (Neblett, 2019). Few studies have examined how youth from different ethnic groups acknowledge and identify exposure to race-based stress. Bañales and colleagues found that there were no significant differences between ethnic groups in their awareness of racial discrimination (2021). Children reported instances of interpersonal racism more frequently than structural forms of discrimination (Bañales et al., 2021). Perhaps, then, youth who experience interpersonal discrimination exhibit higher sensitivity in the cortisol response following a social stressor due to increased vigilance during this developmental period. Due to increasing rates of ethnic diversity in the United States, it is essential to continue examining how racial discrimination uniquely impacts youth from different racial and ethnic groups. The current study examined how parental communication and socialization may distinctly influence the stress response across ethnic groups.

Conceptual Framework

Although Lazarus and Folkman (1984)'s transactional theory of stress has been cited as a foundational framework in exploring the health-related consequences of racial discrimination in adults (Greer et al., 2009), a more recent conceptual model proposed by Grant and colleagues may be more fitting in exploring the racism-health relationship among children and adolescents (2003). The general conceptual model of the role of stressors in pediatric psychopathology emphasizes environmental changes experienced during childhood and adolescence and the threat these events may have on physical and mental health and well-being (Grant et al., 2003). This framework has primarily been used to explore environmental stress stemming structural disadvantage (e.g., poverty,

lack of neighborhood resources, etc.; McMahon et al., 2013; Tolan & Grant, 2009). However, to our knowledge, this model has not yet been applied to environmental stress related to interpersonal race-based discrimination. The current study utilized this framework to compare the differential impact of exposure to interpersonal and institutional discrimination in youth.

The current study also incorporated Clark and colleagues' biopsychosocial framework which explores the biopsychosocial effects of perceived discrimination on health outcomes among Black Americans (1999). If an individual perceives an environmental stimulus as racist or discriminatory, this may result in a heightened psychological and physiological stress response that in turn negatively affects health outcomes over time (Clark et al., 1999). Psychological responses to perceived discrimination such as anxiety, hopelessness, fear, etc., and physiological changes including activation in the neuroendocrine system through the hypothalamic-pituitary-adrenal (HPA) axis may be related to a multitude of health outcomes. Although the model was originally created to explore the association of discrimination and stress among Black Americans, it has been widely applied and supported in research focused on individuals from other ethnic identities (Sanchez et al., 2018, Carter et al., 2019, Lee & Ahn, 2012). The purpose of the current study is to examine how discrimination and prolonged activation of stress responses may deleteriously influence the wear and tear of the mind and the body in adolescents from various ethnic and racial groups.

Stress Reactivity and the Role of Cortisol

The physiological system plays an essential role in the discrimination-stress relationship, and long-term physical and mental health effects may be consequences of

the body's depletion from heightened physiological responses over time. Racial discrimination may affect physiological processes through dysregulation of cortisol levels and flatter diurnal cortisol slopes which, in turn, lead to worsened physical health outcomes (Brody et al., 2018; Zeiders et al., 2014), particularly in ethnic minority groups (Cohen et al., 2006). Findings from a systematic review and meta-analysis showed that flatter diurnal cortisol rhythms across the day were related to worsened mental and physical health outcomes (e.g., internalizing, and externalizing disorders, obesity, immune and inflammatory outcomes, cancer, and fatigue; Adam et al. 2017, Adam & Kumari, 2009).

Cortisol is the most common and widely used indicator of HPA activity in human research (Adam et al., 2020) and has strong implications for developmental health outcomes caused by changes in the stress response (Adam et al., 2017; Fekedulgen et al., 2007). Activation of the HPA axis is necessary and can be adaptive in response to acute stressors (Adam et al., 2015). Generally, chronic stress and repeated activation of the HPA axis can result in either increased cortisol levels that lead to allostatic load, the persistent wear and tear in the body (Dickerson & Kemeny, 2004), or hypercortisolism, resulting a lower and flatter cortisol pattern (Adam et al., 2015). Cortisol can be examined using several methods such as average total cortisol output (Huynh et al., 2016; Zeiders et al., 2012), cortisol elevation (Doane & Zeiders, 2014), cortisol attenuation (Adam et al., 2015), and diurnal cortisol rhythms (Cohen et al., 2006; DeSantis et al., 2007, Martin et al., 2012; Skinner et al., 2011). Additionally, studies on youth with chronic exposure to discrimination over time reported flatter diurnal cortisol slopes (Huynh et al, 2016; Zeiders et al., 2014), whereas participants involved with lab-induced

discriminatory experiences were more related to increased cortisol reactivity (Adam et al. 2020, Busse et al., 2017).

Area under the curve (AUC) is another common measurement and represents total cortisol through wake-time (Adam et al., 2020). Due to the various cortisol indices within the HPA axis (e.g., baseline, AUC, peak reactivity, etc.), there has been an increased call for consistency and transparency in cortisol studies to compare different forms of cortisol measurement and identify potential intersections and important distinctions among each measure (Khoury et al., 2015). Some researchers have recommended the use of both AUCg (area under the curve with respect to ground) and AUCi (area under the curve with respect to increase) as primary cortisol indicators to avoid analyzing datasets with overly repetitive cortisol measurements (Khoury et al., 2015; Pruessner et al., 2003). Baseline cortisol levels are often incorrectly identified to represent anticipatory stress response (Khoury et al., 2015; Pruessner et al., 2003), while AUCi may be a lesser used measurement due to misuse and misunderstanding of what it represents (changes over time; Khoury et al., 2015; Fekedulegn et al., 2007). The current study explored cortisol measurement differences for race-based social stress to gain a better understanding of the importance in choosing specific indices (Khoury et al., 2015).

Racial Discrimination and Cortisol Activation

The impact of discrimination on cortisol on adolescents has not yet been fully understood despite the importance of this developmental period. Much of the existing literature on the relationship between discrimination and cortisol levels either focuses primarily on adults (Berger & Sarnyai, 2015; Brody et al., 2014; Cohen et al., 2006; Lee et al., 2018) or examined how discrimination experienced in childhood may impact

cortisol levels later in adulthood (Huynh et al., 2016; Adam et al., 2015). There have only been a small number of studies that assess the occurrence of discrimination and HPA activity in adolescence (Huynh et al., 2016). Zeiders and colleagues found that Mexican adolescents who experienced more discrimination also showed higher cortisol levels (2012), but discrimination was associated with flatter diurnal cortisol rhythms in Black young adults (Skinner et al., 2011). Some studies have found that adolescents of color who experience discrimination exhibited higher levels of cortisol measured by cortisol awakening response (CAR; Doane & Zeiders, 2014) and greater total daily cortisol measured by area under the curve (AUC; Huynh et al., 2016), while others showed that discrimination predicted lower CAR and lower AUC (Adam et al., 2015). Discrepancies in findings suggest how chronic stressful experiences can lead to either allostatic load (heightened cortisol) or hypocortisolism (blunted cortisol); however, the directionality of this relationship remains unclear. Huynh and colleagues found some indication of racial/ethnic differences in cortisol reactivity to discrimination. Perceived discrimination did not predict changes in waking cortisol for Latinx youth but did for youth from other backgrounds (Huynh et al., 2016). Physiological changes within the HPA axis due to stressful events such as racial discrimination affect one's physical, emotional, cognitive, and psychological well-being (Adam et al., 2020). Due to the variability in study findings, continuing to explore the activation of discrimination on physiological pathways, as well as various cortisol measurement is warranted. The current study aimed to further predict an increase versus decrease in stress reactivity and to provide more insight about the cumulative toll racial discrimination has on physiological, psychological, and physical health outcomes among today's youth.

Supportive Family Communication

A large gap remains in the literature pertaining to protective factors that may influence the differential impact of racial discrimination on overall cortisol sensitivity in youth from ethnically diverse backgrounds. Family social support may serve as a protective factor against cortisol dysregulation and poor health outcomes in youth who have experienced interpersonal and institutional racism (Afifi et al., 2011). Social support refers to general, yet multidimensional, parenting practices and resources provided to establish adjustment and promote positive well-being (Cooper et al., 2013; Thoits, 2011). High social support has generally become a well-established protective factor in the current literature, specifically as it relates to adolescent stress and the alleviation of distress derived from instances of race-based discrimination (Cooper et al., 2013; Hammack et al., 2004). High social support may be an indispensable facilitator in the alleviation of negative outcomes associated with dysregulated stress due to racial discrimination (Jackson et al., 2010), while individuals with lower levels of support may have exacerbated outcomes. Positive social support may decrease cortisol levels for individuals experiencing chronic stress (Rosal et al., 2004) while parental conflict may induce dysregulated (either too high or too low) cortisol levels in youth (Afifi et al., 2011). The current study used Cohen and Wills' (1985) stress buffering model which emphasizes that those with high social support manage stress better than individuals without this support (Afifi et al., 2011; Cohen & Wills, 1985). Over the past decade, a great number of researchers have adopted this model and explored how social support may moderate the relationship between race-related stress and health outcomes (Brody et al., 2006; Cohen et al., 2006; Lincoln et al., 2005). Many of these studies that used the

stress buffering model have been based on adult populations and more research is needed to better understand the effects of social support and relational health, particularly family communication, as an important factor of positive youth development, specifically for adolescents of color.

Family support through open communication about race and racism may help to better prepare children for the harmful, uncontrollable effects of racial discrimination (Harrell, 2000). Adolescents of color may feel more secure in communicating their experiences when provided with opportunities to voice and process these experiences with family figures in their life whom they trust and feel a certain closeness towards, which may reduce overall distress (Hammock et al., 2004). In family systems, children with parents and caregivers who support, listen, and empathize with them, are more equipped to regulate themselves during stressful situations (Afifi et al., 2011). For adolescents of color, family social support may be especially influential due to collectivist cultural values and a strong emphasis on familism (Mossakowsi & Zhang, 2014). Family support through strong parent-child relationships is important in the Black community due to its association with an African-centered worldview (Grant et al., 2000). Brody and colleagues found that Black adolescents with supportive and engaging parental relationships were less negatively impacted by racial discrimination (2018), including fewer depressive symptoms and conduct problems (Cooper et al., 2013). For the Latinx community, the cultural value of familismo emphasizes the importance of family closeness (Lee & Ahn, 2012). Additional research findings among Asian American adolescents demonstrated that family social support is a more useful resource for discussing discriminatory experiences than peer support, as family members from the

same ethnic background may share similar experiences and adolescents may not want to burden their friends with their personal problems (Mossakowski & Zhang, 2014). Developing a strong racial identity through racial socialization may promote a positive sense of self which may combat instances of negative social evaluation such as discrimination (Adam et al., 2020). Ultimately, exploring the role of family relationships as a protective factor across diverse adolescent populations may provide additional insight on how youth with high supportive communication may display more positive and adaptive health outcomes, a relationship that is currently understudied in the field.

Family communication greatly influences the physiological stress response in childhood development (Afifi et al., 2011; Pendry & Adam, 2007; Fortunato et al., 2007). Adolescent studies have shown that teens whose parents demonstrate high social support through strong communication exhibit lower cortisol levels or no response versus cortisol overactivity (Rosal et al., 2004; Afifi et al., 2011). Children with high levels of support may in turn be more equipped to maneuver these experiences and regulate/maintain their cortisol levels than individuals who experience racial discrimination but who do not have strong communication within their family unit. Although these findings further indicate a potential relationship between social support and the HPA axis, parental communication patterns among adolescents with heightened social stress due to racial discriminatory experiences remains less known. The relationship between race-based stressors (e.g., racial discrimination) and overall health outcomes is influenced by family processes (Neblett, 2019). Children with high levels of support may in turn be more equipped to maneuver these experiences and regulate/maintain their cortisol levels than individuals who experience racial discrimination but who do not have strong communication within

their family unit. Therefore, examining the role of supportive parental communication and the relationship between racial discrimination and cortisol sensitivity can better inform potential health initiatives and interventions and promote positive youth development amid ongoing social stressors and adversity.

The Current Study

To our knowledge, no other studies have explored the moderating effects of family communication and race/ethnicity on the relationship between race-based discrimination on the HPA axis through the comparison of cortisol indicators. This study has four main aims: 1) To examine racial and ethnic differences in the frequency of exposure to interpersonal and institutional racial discrimination; 2) To explore the effects of self-reported interpersonal and institutional racial discrimination on acute cortisol stress reactivity; 3) To examine the role of family communication as a moderator for the impact of racial discrimination on acute cortisol stress reactivity; and 4) To examine the role of ethnicity as a moderator for the relationship between family communication, racial discrimination, and acute cortisol stress reactivity. We predict: 1) There will be differences in the frequency of exposure to interpersonal and institutional racial discrimination, and Black, Latinx, and Asian youth will experience significant discrimination than white youth; 2) There will be a positive, direct relationship between interpersonal discrimination and cortisol reactivity, and youth with higher levels of interpersonal discrimination will have greater cortisol output than youth with higher levels of institutional discrimination; 3) Family communication will moderate the relationship between both interpersonal and institutional discrimination and cortisol reactivity, suggesting that youth who report with high family communication will have

low cortisol reactivity or no change in cortisol response, while individuals with low family communication will have elevated cortisol levels; 4) Participants' ethnicity will moderate the relationship between family communication, interpersonal discrimination, and cortisol response, and high levels of family communication will lower the cortisol response for youth of color from various ethnic groups (e.g., Black American, Latinx American, Asian American, and Other-identified American youth). This is an exploratory research question.

Method

Participants

Three-hundred and seventy-nine adolescents from schools located in a diverse, urban city and their parents participated in the current study. Participant ages ranged from 11 years old to 18 years old (M = 14.76, SD = 1.97) with 52% identifying as female. Of the sample, 35% identified as Hispanic/Latinx, 31% identified as Black, 14% identified as White, 10% identified as Asian, and 8% identified as Other. Thirty percent of participants reported total income within the $25,000-$50,00 range, 22% between $0-$25,000, 21% between $50,000-$80,000, 12% between $80,00-$100,000, 8% between the 100,000-150,000, and 2% were within the over $150,000 range (see Table 1).

Procedure

Survey data and social stressor tasks were collected in two waves, six months apart. Time 1 and Time 2 had equivalent protocols; however, Time 2 included a different stressor task. University research staff recruited and consented participants in their classrooms. Data collection consisted of eight-hour sessions held on Saturdays at DePaul

University with provided transportation. Parents completed a series of questionnaires and received a $10 gift card to Target, Old Navy, or Best Buy as compensation for their participation. Adolescent participants were also given $50 for their participation. Participants completed self-report questionnaires and psychological screening clinical interviews with staff.

Measures

Racial Discrimination

Perceived interpersonal discrimination was measured using the Urban Adolescents Life Experiences Survey (UALES; Allison et al., 1999). The UALES is a self-report measure adapted from the Adolescent Perceived Events Scale (APES; Compas et al., 1987), created by predominantly youth of color from low-income, urban communities to measure exposure to stressful experiences. The current study used the sample item, “I’m treated different because of my race” to measure perceived interpersonal discrimination. Participants rated each statement using a scale ranging from 1 through 5; the higher the number represented increased exposure.

Perceived institutional discrimination was measured using the Systems Level Stress questionnaire (SLS; Grant et al., 2018). The SLS assesses stressors resulting from institutional forms of discrimination and environmental disadvantage in school and neighborhood settings. Sample school items included, “My school has a building that is falling apart,” and “My school has books for everyone.” Participants were instructed to check all that applied in the school context. Neighborhood items included statements such as “my neighborhood has a lot of crime,” and “my neighborhood has police who are kind and want to help.” The total number of checks were summed and negative

experiences were recoded. Higher scores were indicative of greater exposure to institutional discrimination.

Cortisol Response

Cortisol samples were collected throughout the Time 1 data collection in conjunction with a social stress challenge known as the Trier Social Stress Test (TSST). The TSST is a laboratory-based stress protocol that is widely used to examine physiological responses to social stress and to stimulate an increase in stress hormones (Kirschbaum et al., 1993; Kudielka et al., 2009). Participants were told that they needed to prepare a speech in front of judges and to members of their group. Participants provided saliva samples before the stress task, after their speech preparation, and then again after the completion of the speech task. Participants also completed a survey to assess their mood. The participants were then debriefed after the tasks and then provided another saliva sample shortly afterwards. Saliva samples were used to measure participants' average total acute cortisol reactivity and changes over time at Time 1. Cortisol peak reactivity and AUC were the primary indicators in this study. Cortisol peak reactivity was used to explore levels from baseline to peak (Cort_bs2pk=Cortugdl.4-Cortugdl.2) and AUCi was supplemented to explore changes over time following exposure to a stress event (AUCi=AUCg-(ts2.5-ts2.2) *Cortugdl.2.).

Family Communication

The current study measured family communication using the communication domain of the Family Relationship Scale (FRS). The FRS is a 39-item survey that assesses family processes within diverse ethnic groups (Tolan et al., 1997). Participants were asked to pick the best-fitting answer about their own family. The survey used a 4-

point Likert scale, ranging from “Not at all true” to “Almost always or always true.” The communication subscale had three items such as, “My family knows what I mean when I say something.” Internal consistencies in the current study are similar to previous studies α = .697; Tolan et al., 1997).

Results

Preliminary Analyses

Correlation analyses were also used to explore the association between all primary study variables and potential confounding variables (Table 2). There was a negative correlation between interpersonal discrimination and gender ($r(233) = -.156$, $p = .020$), such that girls reported more experiences of interpersonal discrimination than boys. No other covariates were significantly related to the interpersonal discrimination variable. Institutional discrimination was significantly correlated with sleep quantity, birth control use, and caffeine use. There was a negative correlation between institutional discrimination and sleep quantity, $r(168) = -.212$, $p = .006$, suggesting that the less institutional discrimination was associated with more sleep. Institutional discrimination was also associated with greater birth control use ($r(156) = .165$, $p = .040$) and increased daily caffeine intake ($r(152) = .181$, $p = .026$).

Aim 1: Racial/Ethnic Differences in the Frequency of Exposure to Interpersonal and Institutional Racial Discrimination

To investigate the exploratory hypothesis of potential ethnic group differences in experiences of racial discrimination, the frequency of exposure to interpersonal and institutional racial discrimination across ethnic groups were explored using one-way ANOVAs. ANOVAs showed that there were not statistically significant racial/ethnic

differences for the different types of discrimination or for cortisol peak reactivity (see Table 3). However, there were statistically significant ethnic group differences in AUCi mean scores between the groups. Tukey's HSD test of multiple comparisons found that Asian youth had the highest AUCi levels compared to Latinx/Hispanic youth (p = .009, 95% C.I. = ([-3.891, -.377]), Black youth (p = .000, 95% C.I. = ([-4.534, -1.042]), and Other-identified youth (p =.034, 95% C.I. = ([.125-4.97]).

Aim 2: Effects of Interpersonal and Institutional Racial Discrimination on Cortisol Peak Reactivity and AUCi

Correlation analyses were conducted to explore the relationship between the two different types of discrimination (interpersonal and institutional discrimination) and cortisol reactivity from base to peak and AUCi (Table 2). Cortisol peak reactivity level was positively correlated with interpersonal discrimination ($r(203) = .154$, $p = .028$), but not institutional discrimination. Interpersonal discrimination was also significantly correlated with AUCi ($r(172) = .220$, $p = .004$), but institutional discrimination was not (AUCi, $r(177) = .061$, $p = .423$).

Aims 3 and 4: The Moderating Effect of Race/Ethnicity on the Moderation of Family Communication on Interpersonal and Institutional Discrimination and Cortisol Reactivity (Peak Reactivity and AUCi)

To test the hypotheses that the impact of discrimination on youth's cortisol reactivity is buffered by supportive communication and that these effects vary by race/ethnicity, a three-way moderation analysis was conducted using PROCESS Model 3 (v4.0; Hayes, 2013). Interpersonal discrimination and institutional discrimination were tested in separate models (see Table 4 and Table 5). Although birth control, sleep

quantity, and caffeine use showed significant correlations with study variables, when they were included in the PROCESS models, the models did not converge. Therefore, gender was the only covariate used in the current study.

Peak Reactivity. The overall model for interpersonal discrimination was statistically significant, $F(20, 125) = 5.85$, $p = .000$; $R^2 = .48$. There was a significant conditional three-way interaction effect ($b = 1.30$, SE = .23, $p = .000$; 95% CI: .839-1.754) such that supportive communication moderated the relationship between interpersonal discrimination and cortisol peak reactivity for Black youth. The relation between interpersonal discrimination and peak reactivity was significant for Black youth who reported medium levels of family communication ($b = 1.12$, SE = .14, $p = .000$; 95% CI: .93 – 1.40) and high levels of family communication ($b = 1.98$, SE = .20, $p = .000$; 95% CI: 1.59 – 2.39). Examination of the interaction plot (Figure 1) showed an enhancing effect that as interpersonal racial discrimination and family communication increased, cortisol reactivity increased. Black youth from families with medium to high levels of communication had the most cortisol reactivity suggesting heightened sensitivity to discrimination compared to their non-Black peers. Family communication did not moderate the effect of interpersonal racial discrimination on cortisol reactivity for any other racial/ethnic group (see Table 4).

For institutional discrimination, no underlying interactions between ethnicity, family communication, and cortisol peak reactivity emerged. The overall model was non-significant (F (20, 117) = .748, $p = .767$, ns; $R^2 = .113$).

Area Under the Curve. Supplemental analyses were conducted using cortisol levels measured through area under the curve (AUCi). The interpersonal discrimination

model was statistically significant, F (20, 104) = 2.19, p = .005; R^2 = .30, but no significant main effects or interaction effects emerged.

The institutional discrimination model was also not statistically significant, F(20, 102) = 1.59, p = .068 ns; R^2 = .238 (see Table 5). There were no significant main effects or lower order interactions.

Discussion

The purpose of the current study was to explore the racial/ethnic differences in the frequency of exposure to interpersonal and institutional race-based discrimination, the impact of these types on cortisol reactivity, and the moderating effects of family supportive communication and ethnicity/race on cortisol reactivity (AUC and peak activity) in adolescents from racially diverse backgrounds. Three key findings emerged. First, Asian youth reported significantly higher total average cortisol levels than their Black, Latinx, and Other-identified peers in response to the stress task. Second, youth who reported more interpersonal, but not institutional discrimination, experienced more cortisol reactivity in response to an acute group-based, social stress task. Third, the effects of discrimination on cortisol dysregulation among youth of color depended on family communication level and ethnic group membership. Supportive family communication enhanced the impact of interpersonal discrimination on reactivity for Black youth only such that as the level of family communication increased, cortisol reactivity also heightened.

Racial/Ethnic Group Differences in Discrimination Frequency

In the examination of racial discrimination of youth, many studies have either focused on its impact pertaining to one specific racial/ethnic group (Anderson et al.,

2019; Constante et al., 2021; Lee & Ahn, 2012; Lee & Ahn, 2011; Zeiders et al., 2012), or compared the effects of discrimination in one minoritized racial/ethnic group to their white peers (Adam, 2020); however, very few studies have compared instances of racial discrimination across different ethnic groups in youth (Bañales et al., 2021). The current study's exploratory hypothesis of potential racial/ethnic group differences in the frequency of interpersonal and institutional racial discrimination experiences was not supported. Although this finding was inconsistent with one study on adults that found that Asian Americans reported less lifetime exposure to discrimination compared to Black Americans and Latinx adults (Brondolo et al., 2011), the lack of statistical significance was consistent with other studies in the child and adolescent literature (Bañales et al., 2021; Huynh et al., 2016). These findings may suggest that our measure of discrimination may not have fully captured the unique and nuanced differences between groups. Reports of discriminatory experiences may also be dependent on whether minoritized youth are in spaces where they are in the ethnic majority versus one of the few people of color in their community, which our study was unable to test. Additionally, a larger sample size may have found variations in exposure. Future research should continue to compare race-based discriminatory experiences among different ethnic groups in order to increase our knowledge about the variability and prevalence among youth of color.

The Role of Ethnicity in Cortisol Reactivity and Discrimination

Although there were no ethnic group differences in the frequency of racial discrimination, there were significant ethnic differences in cortisol indicators. Asian youth had significant mean differences in AUCi levels from Latinx youth, Black youth, and Other-identified youth. Much of the current adolescent literature on race-based

discrimination and cortisol has focused on Black and Latinx youth and very few studies have identified potential cultural factors that influence discrimination in Asian youth (Lee & Ahn, 2011; Mossakowski & Zhang, 2014) and its impact on cortisol reactivity in this particular population (Huynh et al., 2016). AUC represents the total daily cortisol output and AUC levels are associated with immigrant status and daily life stressors in adolescents (Huynh et al., 2016; Gustafsson et al., 2006). Therefore, it is possible that total cortisol output in Asian youth was elevated due to other cultural factors in conjunction with racial discrimination that were not measured in this particular study. Future research should continue to explore other individual level factors in conjunction with racial discrimination that may account for variability in cortisol reactivity among adolescents of color to better understand the relationship between stress biology and cultural development during adolescence.

The Salience of Interpersonal Racial Discrimination

The current study's hypothesis that interpersonal discrimination would be more closely related to cortisol reactivity than institutional discrimination was supported for both cortisol peak reactivity and AUC levels. In a recent mixed-method study, results showed that it was more common for youth to describe and identify racism-related experiences as interpersonal rather than institutional/structural (Bañales et al., 2021). Although these two types of discrimination are interconnected, youth may be more aware, and perhaps more physiologically affected, by interpersonal discrimination due to its often apparent, immediate, and direct nature, and negative social interactions may elicit a physiological stress response (Acevedo-Garcia et al., 2013). These effects may be especially pertinent if discrimination occurs during adolescence, a sensitive time period

where socially negative experiences may have greater impact an individual's development than other life stages (Acevedo-Garcia et al., 2013; Adam et al., 2020). Interestingly, youth from lower SES backgrounds may be more likely to describe racism-related experiences using interpersonal experiences (Bañales et al., 2021) and may be less aware of structural components that are deeply embedded in our society such as neighborhood disadvantage, residential segregation or under-resourced schools in predominately minoritized neighborhoods. Measuring the experience of interpersonal and institutional discrimination may also be difficult among younger children due to potential lack of understanding or a nuanced perception of the sometimes-subtle manifestation of race-based discriminatory events. Discrimination among people of color has often been measured using self-report questionnaires focused on unfair treatment. Very few studies have examined context-level differences in perceptions of discrimination (Acevedo-Garcia et al., 2013; Gee, 2008). Therefore, it is essential to continue developing measures that factor in child developmental stages and consider other contextual elements (e.g., ethnic makeup of one's neighborhood and school; Acevedo-Garcia et al., 2013) and racial socialization practices among families of color (Adam et al., 2020).

Supportive Family Communication

The current study's hypothesis that supportive family communication would buffer the impact of discrimination on cortisol reactivity for youth of color was partially supported with respect to interpersonal, but not institutional discrimination. Interestingly, this moderating effect was found for Black youth only such that Black youth who reported higher levels of clear communication were more susceptible to heightened cortisol peak reactivity compared to those with lower communication, which was

opposite of our hypothesis that positive communication would lower cortisol reactivity levels in adolescents of color. Findings were inconsistent with some previous studies that suggest that social support has a calming effect on children and adolescents and that positive family dynamics (including higher levels of parental involvement) play an important role in physiological stress reduction (Afifi et al., 2011; Floyd et al., 2007; Pendry & Adam, 2007). These mixed findings across both child and adult literature further highlight the ongoing complexity of identifying the optimal amount of cortisol output or reactivity and what the impact of lower versus higher cortisol output/reactivity may be. Although heightened cortisol reactivity has been considered a more negative reaction that can increase individuals' vulnerability to many health problems long-term, there is also evidence suggesting that heightened stress can be potentially beneficial in promoting resilience in adults, specifically for anticipatory reactivity in the short-term (Aschbacher et al., 2013). With higher levels of open communication, Black youth may be more vigilant to the anticipatory effects of racial discrimination, and perhaps become more physiologically equipped to adapt when stressful racially charged interpersonal events arise (Gaylord-Harden et al., 2012). Furthermore, due to the nature of the Trier Social Stress Test which examines adolescents' stress response to negative social evaluations (Kirschbaum et al., 1993), Black youth who report higher family communication may be more likely to discuss race-related experiences more, and thus may be more aware and sensitive to situations that illicit stereotype threat and potential racial biases.

Family support and its association with an African-centered worldview of strong parent-child relationships are an important aspect of the Black community (Grant et al.,

2000). Black youth with supportive systems demonstrate resilience when faced with racial discriminatory experiences (Cheeks et al., 2020) perhaps due to racial socialization processes. Racial socialization is the practice of (often cautious) communication about race-related experiences that tends to occur intergenerationally (Cheeks et al., 2020). Due to the nature of racial socialization messages about cultural pride and positive racial identity development, Black youth who have active, clear communication with family members may be more comfortable discussing racial discrimination with them (Brody et al., 2016), which is helpful for positive racial identity development (Harrell, 2000).

Research has shown similar patterns of the importance of family and the protective factor of family connectedness through supportive communication among non-Black minoritized youth such as familism in Asian youth (Mossakowski & Zhang, 2014) and familismo in Latinx youth (Lee & Ahn, 2012). However, results did not yield to statistically significant findings for a buffering effect of family communication on the relationship between race-based discrimination and cortisol reactivity for these ethnic groups. It is possible that with a larger sample size, we would see more distinction in how support through family communication and racial socialization may influence the physiological stress response. Additionally, our study measures may not have fully captured the unique, culturally distinctive perspectives of interpersonal and institutional discrimination experienced in the United States among people of color and the variability of communication styles across ethnic groups. Thus, despite the extensive amount of evidence on the cumulative toll of discrimination has on minoritized populations, the specific cultural mechanisms of discrimination, supportive family communication, and

cortisol reactivity and their differential impact on individuals of diverse ethnic groups require further investigation.

Strengths/Limitations/Future Directions

The current study had several strengths. To our knowledge, this study is the first study to examine the relationship between supportive family communication, racial discrimination, and cortisol reactivity (measured by peak reactivity and AUCi) in a diverse sample of ethnically diverse adolescents. Supportive family communication is an important aspect of social support as an creates an environment for family members to openly and honestly express their needs during times of distress and uncertainty. Our findings provided new insights about the physiological effects of discrimination and the unique role of family communication, specifically for Black youth who report experiencing interpersonal discrimination. Another strength of the study was the ability to compare cortisol indices to better understand the importance of reporting cortisol measurement (Khoury et al., 2015). This improves the consistency and transparency in cortisol literature by identifying potential overlapping and repetitive measures (Khoury et al., 2015).

Although this study consisted of novel findings, there were some limitations. First, participants were asked to recall histories of racial discrimination in this cross-sectional study that measured cortisol reactivity with an acute stress test. Individuals who report chronic experiences of racial discrimination have differential stress responses than individuals who solely report more acute racially charged stressful experiences (Adam et al., 2020) but the current study was not able to test this. Additionally, this study used cross-sectional data and thus was not able to capture potential longitudinal effects or

changes over time. Exploring the long-lasting effects of chronic stress on racial discrimination may better predict health outcomes across the lifespan (Adam et al., 2015). as well as provide insight on the long-term effects of heightened cortisol reactivity. Future studies should capture potential longitudinal effects to further understand how individuals with heightened cortisol reactivity may be resilient to anticipatory stress in the short-term but may experience the adverse effects of the allostatic load in the long-term (Aschbacher et al., 2013).

Secondly, the measures of discrimination only include some aspects of interpersonal and institutional/systemic racial discrimination and did not account for other forms of racial discrimination that may be just as impactful on stress biology and health outcomes (e.g., various racial discrimination, residential segregation, collective experiences of racism, and transgenerational racial trauma; Harrell, 2000). It is important to note that data from the current study were collected in 2012-2013. This may have had a cohort effect based on increasing awareness of various types of racial discrimination (e.g., vicarious trauma) due to the deleterious effects of ongoing police brutality (Graham et al., 2020) and anti-Asian racism (Gover et al., 2020) revealed to many in 2020. Additionally, in this digital age of social media, online racial discrimination, both interpersonally and vicariously, may be especially important to investigate, as online experiences are common due to anonymity (English et al., 2020). Future research should continue to address the various ways in which racially-charged experiences manifest physiologically by exploring the different types of race-based discrimination.

Third, our findings were only significant for interpersonal discrimination. Our measurement of institutional discrimination focused on environmental disadvantage in

neighborhood and school settings and may not have fully encapsulated the institutional and structural components of racial discrimination and racism, the most fundamental type to evoke change with respect to the racism-health link (Neblett 2019; Jones, 2000). Although interpersonal discrimination is often the main form of discrimination considered when referring to racism-related experiences (Jones, 2000), it is only one piece of the racial discrimination puzzle (Neblett 2019). Future studies should continue to develop and include measures that adequately depict structural discrimination on a macro-level (Neblett 2019; Harrell, 2000) for a full representation of the continuous effects of race-based discrimination in the United States.

Lastly, the current study had relatively small numbers of youth in some racial/ethnic group categories which may have reduced the ability to detect significant group differences and limited our ability to fully examine the protective factor of supportive family communication in these groups. Future research should compare the similarities and differences of racial discrimination experienced by Asian youth to those of other minoritized youth, especially due to increasing rates of anti-Asian discrimination (Gover et al., 2020). This may be especially important in understanding how each different ethnic groups cope and protect themselves from discriminatory events experienced during adolescence.

In conclusion, interpersonal discrimination has significant physiological impact on the hypothalamic-pituitary-adrenal (HPA) axis, measured through salivary cortisol (Adam et al., 2020). Changes in physiological responses because of race-based discrimination have pernicious consequences; thus, it is imperative to recognize these effects in order to predict health outcomes across a lifespan. Since racial discrimination

and race-related stressors are persistent and normative parts of life for adolescents of color, it is important to continue uncovering the physiological effects of racial discrimination during this sensitive developmental period, which may in turn deleteriously influence both mental and physical health outcomes over time (Clark et al., 1999). In addition, exploring the role of family communication, specifically for Black adolescents, is essential in providing additional insight of the effects of racial awareness and vigilance and the physiological stress response, which may help to implement more effective communication patterns among families of color and tailor health interventions to mitigate potential dysregulation of stress reactivity stemming from racial discrimination.

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Appendix A: List of Tables

Table 1

Demographic Characteristics of Participants (N = 329)

	M (SD)
Age	14.76 (1.97)
Sex	*M (%)*
Female	171 (52.8)
Male	153 (47.2)
Race & Ethnicity	
Hispanic	117 (35.6)
Black, non-Hispanic	105 (31.9)
Asian, non-Hispanic	33 (10.0)
Other, non-Hispanic	26 (7.9)
White, non-Hispanic	48 (14.6)
Family Total Income	
$0-$25,000	49 (22.3)
$25,001-$50,000	66 (30.0)
$50,001-$80,000	47 (21.4)
$80,001-$100,000	27 (12.3)
$100,001-$150,000	18 (8.20)
Over $150,000	13 (5.90)

Table 2

Correlations between Primary Study Variables and Covariates

Variable	1	2	3	4	5	6	7	8	9
1. Int Discrim	—	.054	-.076	.154*	.220**	-.156*	-.051	-.056	.062
2. Ins Discrim		—	.022	.053	.061	.032	-.212**	.165*	.181*
3. FC			—	.078	.073	.102	.217**	-.080	-.052
4. Cort Peak				—	.871**	-.152	.089	-.020	.061
5. AUCi					—	.024	.142	-.059	-.179
6. Gender						—	-.126	-.059	-.019
7. Sleep Quantity							—	-.236**	-.124
8. Birth Control								—	.144
9. Caffeine Use									—

*$p < .05$. **$p < .01$.

Int Discrim = interpersonal discrimination, Ins Discrim = institutional discrimination, FC = family communication, Cort Peak = cortisol peak reactivity AUCi = area under the curve (with respect to increase)

Table 3

Means, Standard Deviations, and One-Way Analyses of Variance in Types of Discrimination, Family Communication Across Race/Ethnic Groups

Measure	Latinx/ Hispanic		Black		Asian		Other		White		Total		*F*(4, 305)	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Int Discrim	1.43	.832	1.40	.839	1.55	1.121	1.52	.846	1.26	.759	1.45	.886	.452	.009
Ins Discrim	8.574	6.014	8.663	6.263	8.000	6.000	10.125	6.229	8.744	5.769	8.97	6.02	.180	.006
FC	1.819	.744	1.843	.708	1.927	.665	1.847	.773	1.957	.726	1.84	.723	.362	.004
Cort Peak	.068	.145	.121	.882	.121	.122	.027	.106	.063	.143	.084	.511	.452	.003
AUCi	1.150	2.44	.494	1.539	3.285	4.009	.738	3.229	1.386	2.928	1.20	2.70	4.999**	.099

$^{*}p < .05$. $^{**}p < .01$.

Int Discrim = interpersonal discrimination, Ins Discrim = institutional discrimination, FC = family communication, Cort Peak = cortisol peak reactivity AUCi = area under the curve (with respect to increase)

Table 4

Moderated Moderation Analysis: Interpersonal Discrimination and Cortisol Response Moderated by Family Communication and Race/Ethnicity

Effects	Peak Reactivity				AUC(i)			
	Estimate	*SE*	95% CI		Estimate	*SE*	95% CI	
			LL	*UL*			*LL*	*UL*
Constant	.156	.309	-.456	.768	.919	2.321	-3.683	5.521
Gender	-.168	.116	-.398	.062	.939	.708	-.464	2.34
Int Discrim	-.031	.167	-.361	.299	-.385	1.596	-3.550	2.779
FC	.023	.166	-.305	.351	.834	1.252	-1.649	3.317
Int Discrim x FC	.015	.111	-.205	.235	-.660	.948	-2.539	1.220
Black	1.908*	.695	.532	3.283	-1.267	4.455	-10.103	7.568
Asian	.328	1.629	-2.897	3.552	12.765	9.406	-5.887	31.417
Other	-.021	.734	-1.475	1.432	-.170	4.741	-9.571	9.232
White	-.132	.603	-1.325	1.061	.387	4.201	-7.945	8.719
Int Discrim x Black	-1.477*	.454	-2.375	-.578	.299	3.003	-5.657	6.255
Int Discrim x Asian	-.139	1.529	-3.164	2.887	-11.573	8.781	-28.987	5.841
Int Discrim x Other	.023	.3343	-.639	.684	-.206	2.351	-4.867	4.456
Int Discrim x White	.196	.365	-.526	.918	-.321	2.811	-5.895	5.253
FC x Black	-1.604**	.352	-2.301	-.907	.252	2.350	-4.911	4.408
FC x Asian	-.144	.577	-1.286	.998	-4.475	3.378	-11.173	2.223
FC x Other	-.042	.376	-.786	.702	-3.414	2.480	-8.333	1.504
FC x White	.141	.415	-.681	.962	-3.358	3.044	-9.396	2.680
Int Discrim x FC x Black	1.296**	.231	.839	1.754	.258	1.650	-.3.014	3.529
Int Discrim x FC x Asian	.067	.524	-.971	1.104	5.149	3.060	-.919	11.218
Int Discrim x FC x Other	.011	.211	-.405	.428	2.415	1.427	-.414	5.244
Int Discrim x FC x White	-.156	.338	-.824	.512	3.263	2.613	-1.918	8.446

$^{*}p < .05$. $^{**}p < .01$. Int Discrim = interpersonal discrimination, Ins Discrim = institutional discrimination, FC = family communication

Table 5

Moderated Moderation Analysis: Institutional Discrimination and Cortisol Response Moderated by Family Communication and Race/Ethnicity

Effects	Peak Reactivity				AUC(i)			
	Estimate	*SE*	95% CI		Estimate	*SE*	95% CI	
			LL	*UL*			*LL*	*UL*
Constant	.175	.488	-.792	1.142	1.004	2.232	-3.423	5.431
Gender	-.268	.148	-.560	.025	.217	.705	-1.183	1.617
Ins Discrim	.001	.057	-.113	.114	.042	.259	-.472	.557
FC	.023	.221	-.416	.461	-.383	.996	-2.358	1.591
Ins Discrim x FC	.003	.024	-.045	.050	.0455	.107	-.166	.258
Black	.301	.771	-1.226	1.828	.671	3.470	-6.212	7.554
Asian	.524	1.655	-2.753	3.802	-12.275	8.075	-28.293	3.742
Other	-.284	1.399	-3.054	2.487	-9.085	6.210	-21.403	3.233
White	.164	.930	-1.679	2.007	1.494	4.302	-7.039	10.027
Ins Discrim x Black	-.077	.081	-.236	.083	-.219	.362	-.936	.498
Ins Discrim x Asian	-.031	.157	-.341	.279	-1.210	.784	-.344	2.765
Ins Discrim x Other	.027	.124	-.219	.273	.827	.560	-.284	1.937
Ins Discrim x White	.000	.113	-.224	.224	-.064	.524	-1.104	.976
FC x Black	-.169	.385	-.931	.593	-.419	1.717	-3.824	2.986
FC x Asian	-.245	.745	-1.720	1.231	7.042	3.582	-.062	14.145
FC x Other	.230	.792	-1.338	1.799	6.399	3.515	-.573	13.371
FC x White	-.019	.420	-.851	.813	-.062	1.890	-3.811	3.687
Ins Discrim x FC x Black	.053	.039	-.025	.131	.065	.176	-.283	-.414
Ins Discrim x FC x Asian	.016	.066	-.115	.148	-.523	.322	-1.162	.114
Ins Discrim x FC x Other	-.024	.072	-.166	.117	-.641	.325	-1.286	.004
Ins Discrim x FC x White	-.004	.056	-.116	.107	-.009	.253	.971	.493

$^{*}p < .05$. $^{**}p < .01$ Int Discrim = interpersonal discrimination, Ins Discrim = institutional discrimination, FC = family communication, Cort Peak = cortisol peak reactivity AUCi = area under the curve

Appendix B: List of Figures

Figure 1

Black Youth Experiencing Interpersonal Discrimination Have Heightened Cortisol Peak Sensitivity Than Non-Black Youth